White Paper – eMeeting.net and Associated Technology

Background

Communication needs continue to expand in the United States and around the world. As part of that demand growth, there is a concurrent expansion in the demand for audio and video conferencing along with data/document viewing and sharing. Quick, reliable and effective means for multiple people to communicate amongst themselves in real time is very much a part of the drive for more efficiency in business.

The general downward trend for conventional long distance communications metered revenue contrasts with the revenue that can be gained from value added services, such as conferencing. Local telephone exchange carriers have already turned to these types of services, as their own revenues from dial tone have not kept pace with the costs of doing business. As long distance carriers find limits to cost savings from mergers and acquisitions, they will eventually take more notice of the comparatively high margins available from automated value added services such as eMeeting.

By focusing on conferencing as both a business and a technology, eMeeting.net is able to develop a high level of customer satisfaction at a low cost of operation. Eventually, an equipment vendor looking for more products, or a telecommunication services company looking for more revenue, will see eMeeting.net as a valuable addition to their offerings.

Conferencing Technology Overview

Multi-party bridging is the foundation for conferencing. This technology has existed for many years in the form of analog, "dumb" bridges, which require operator services or some sort of "smart" front end. The number of conferees allowed by such technology is typically limited to eight persons or less.

This same limitation exists with most IP (Internet) based solutions. Bridging is performed within servers using the CPU. In many cases, a "push to talk" control key must be manipulated. Echo cancellation, automatic gain control and simultaneous speaking are all nearly impossible to implement. While adequate for casual use, these "Media Servers" are simply not robust enough to handle business communications. CPU utilization makes this permanent.

DSP digital bridges allow hundreds of persons to both speak and hear at the same time during a conference. Well-designed and integrated access hardware can allow any number of convenient and useful features to be integrated.

eMeeting Technology

Data networks are an obvious means for improving the efficiency of multi-party conferencing. Data networks include local area and wide area networks, managed networks, and the Internet. Data networks are voice, video and data capable. Data networks can be used to facilitate command and control functions, setup and scheduling. The Internet, in the form of the World Wide Web (Web), provides a near ubiquitous means of adding features not possible

through the use of the end-to-end limited bandwidth of the public switched telephone network (PSTN).

The technology for eMeeting.net recognizes the inherent problems with quality of service issues over the Web by combining PSTN connectivity with Web efficiency. The Public Switched Telephone Network uses nailed up connections between two points, or multiple points to form a real time absolute path. Thus, voice and data have an exclusive and singular conduit and delivery is assured. The Web operates through a process of converting data (and voice or video) into small packets, which then share pathways with all of the other packets between points.

Inevitably, data packets get lost or delayed. Even within managed networks, congestion can cause temporary loss of data to one or more active parties. For some parts of a conference, this is not important. It does not matter that a face freezes on a screen for a moment, or that a new data sheet takes a few seconds to arrive at everyone's screen.

It does matter if voice audio is distorted, delayed, or otherwise impaired. Quality of service issues for voice traffic transmitted via data networks must be considered in the design of conferencing systems.

In the design of eMeeting, voice audio will be carried across the PSTN as needed to insure quality of service. Most data/document and video will be carried via data connections, primarily through the Web. Features that add to the convenience of use and command and control functions will be carried across that same data network. The best of both worlds is thus achieved.

eMeeting.net is a true convergence product. eMeeting.net allows audio conferencing via telephone and Internet, simultaneously and without regard to connection method. Telephone users join the conference by dialing a toll free 800 number, local line, or in house extension. Internet users connect via Internet or corporate Intranet using their multimedia PC with Microsoft NetMeeting or any H.323 IP "screen phone". Audio is carried simultaneously over both the telephone and data networks. Video, data/document and command/control functions and features are handled exclusively by the data network.

Through eMeeting.net, WTS has successfully combined Audio from the Internet with Audio from the Public Switched Telephone Network. eMeeting.net is a large-scale digital conference bridge that natively handles IP telephony callers. To the best of our knowledge, this ability is unique at this time.

WTS will provide the technology to allow Audio, Video and data/document sharing to be accomplished in a unique environment combining the best of the Internet and PSTN capabilities.

To deploy a traditional PSTN telephone conference bridge on an IP network requires a separate set of equipment called a "gateway". The gateway changes IP calls into telephone calls, which are then routed to the traditional telephone conference bridge. Gateways must be paid for and managed. eMeeting eliminates the gateway, since it can natively handle IP callers.

eMeeting's scale is also important. Most, if not all, competing IP conference platforms are host based. Host based conferencing allows only 8 to 10 conferees per bridge. That's because the host's Pentium processor is designed as a general purpose CPU, not a conference

bridge. eMeeting.net uses dedicated DSP conference hardware, allowing hundreds of simultaneous conferees per bridge.

Platform Specifications

eMeeting is a multi node, turnkey system housed in 19-inch industrial rack mount chassis. All hardware and software is preinstalled and packaged as a system. The primary system components are the File Server, Web Server, PSTN Voice Node(s), VOIP node(s) and the Conference Node. eMeeting.net uses Dialogic telephony hardware. eMeeting.net operates on Microsoft Windows NT and Novell Netware. The system is scalable from 48 ports up to hundreds of ports. PSTN telephony resources and VOIP Internet telephony resources may be scaled independently.

The software and hardware necessary for audio conferencing was developed by WTS. In addition, the command and control functionality and Web interface is a proprietary development. Video and data/document software packages are available from certain vendors, who have agreed to provide access to their control mechanisms to allow for an integrated package.

There are three basic ways of entering a conference. The first is through having all participants dial into a prearranged meeting. This is called Dial-In. A Moderator or Operator informs participants of the toll free, toll number, or Internet address. Participants call the number or enter the URL; enter the conference code and the optional user code. Web participants use a web address to either listen or participate.

In a dial-out type conference, the moderator simply dials in, enters the conference access code and control code, and then dials the telephone numbers of all participants or attempts to connect via data network, both domestic and international. Participants are allowed to talk or be placed on hold until the Moderator assembles the complete group.

A third type of conference allows participants to be included either through dial-in or dial-out. With all three methods of introducing persons to a conference, eMeeting allows both IP and PSTN connectivity. With all three types, passive IP and PSTN feeds allow that method of participation to include as many persons as can be accommodated by deployed equipment.

Planned Capability

A single audio conference is limited to 240 active and unlimited passive participants. Video is limited to 25 active and unlimited passive participants in a single conference. Data/document viewing and sharing is limited to eight active participants and unlimited passive participants. Unlimited participation for passive participants is subject to the availability of hardware and connectivity either "in house," or through strategic partnerships.

A Web enabled interface allows sign-up, scheduling, account review and certain other features to be accessed via the Internet. A command and control program allows a moderator, controller or operator; to visually see all participants, identify who is talking at any given time, establish break-out side conferences and mute or boot participants. A smaller program will be made available for participants so they can see activity and at some future date, small static or active pictures of active participants.

Set-up procedures allow notification of participants via email. A stored address book facilities the process of notification. Documents may be uploaded for distribution during notification.

General Features List

Conference Recording

Any conference may be recorded at an additional charge. A cassette tape of the conference may be ordered at an additional charge. Conference recordings are available for playback to callers at an additional charge. Conference recordings may also be converted to a wave file and delivered to the conference owner at an additional charge, or made available for playback on the Web site.

Password Security

Entry into a conference is limited to PIN access.

Question & Answer Sessions

Conferees are allowed to talk only when recognized by the moderator or operator. A conferee 'raises' his or her hand using Touch Tones™.

Automated Polling (voting)

Conferees are allowed to vote yes or no by using Touch Tones™. The Web module gives the poll result. Confirmed results via email may be ordered at an additional charge.

Lockout Mode - Security

At any time during the conference, an operator or moderator may block entry.

Add Participants

Provided resources are available, additional conferees may be added to a conference at any time

Participant Count

Using the Web control interface, the moderator may see at a glance who is and who is not in the conference.

Chairperson/moderator Features

Line Mute – An operator, moderator, or conference owner, may mute conferees either individually or in mass, at any time, using the Web control interface.

Operator Alert

The Operator or moderator may be alerted by conferees using Touch-Tone™.

Announcements and Message Play (optional)

Pre-recorded announcements and messages may be played back to conferees at any time under the command of an Operator, moderator, or conference owner.

Entry and Exit Tones (optional)

When participants enter or leave, a tone will sound. The moderator, operator, or conference owner may select this feature.

Individual Conferee Code

This option allows the conference owner to specify individual entrance codes, thus providing an audit trail for participation, plus an easy method for roll call. This feature allows the Web conference display to show each conference participant's name.

Operator Support (optional)

There is no additional charge when the conference owner uses the Web interface to control and schedule the conference. An Operator can be supplied at an additional charge on request.

Notification Methods

Email notification —(no additional charge).
Fax notification (optional)
Operator Call notification (optional charge)
Paging Notification

Address Book

Registered conference owners are allowed to maintain an address book of participants as part of the Web page scheduler. Interface to Microsoft's Outlook address book supported.

Accounting Codes

Supplemental Account Codes are allowed at no additional charge. Accounts may input up to five digits under the category of Account Codes for each conference, to allow for internal accounting purposes.

Lecture Mode/Listen Only

A moderator or operator is allowed to mute conferees during all or part of the conference using the Web interface – at no additional charge.

Sub-conferencing

At no additional charge, the moderator, or operator may use the Web command and control interface to break out conferees into sub-conferences

Conference Types by Market

Large Scale Conferences:

Company announcements, shareholder and investor information forums, and similar venues, are starting to become a major factor in the conferencing business. Most equipment manufactured for conferencing does not have the capability to handle the numbers usually involved in such conferences. Typically, a conference of this type can have as many as 200 participants on the telephone, and hundreds, if not thousands, listening and/or watching on the Web.

There are no known estimates for the amount of revenue these conferences can generate. From reliable sources, it is imagined that such conferences will last approximately 90 minutes on average, have 120 telephone participants, and about 500 interested listeners on the Web. The minutes count from just one conference can easily approach 10,000, with Web participation adding additional revenue.

Executive Conference

This would be a group consisting of the primary leaders in a company. They use a telephony conference instead of formal meetings, face-to-face. This group tends to travel, so Meet-Me would be heavily used. Further, this group is into convenience, so either an executive secretary or service operator would likely set it up.

Once per week
5 – 7 participants
90 minutes
Operator support - heavy
Web – Moderate
Record - Yes

Extended Executive Conference

A conference of this type would be for the purpose of upper management explaining policy and procedures to the second level. Several secondary conferences would likely be produced by the primary, as those so informed pass along the guidance received.

Three per month (one primary, two secondary)
12 – 18 participants
120 minutes
Operator support - heavy
Web – Medium
Record – Yes

Departmental Meeting

Whether a sales, service or financial office, groups of people tend to have weekly meetings to insure that all are informed. The contents of the discussions vary, but the frequency doesn't for those who are not in a position to have a face-to-face conference. Most departmental meetings are a once a week schedule, most usually on Mondays or Fridays.

Once per week
6 – 8 participants
90 minutes
Operator support – light
Web – Medium
Record – Sometimes

Training

This type of conference includes certain types of multi-level telephone conferences, colleges, and any other type of conference where a few participants talk, while most of the others are passive listeners. Multi-level tends to have this type of conference one time per week. Schools tend to have sessions twice per week, and casual training is once a month, on average.

Once per week
12 – 20 Participants
120 minutes
Operator support – light
Web – heavy
Record – Always

Sales and Support

This type of conference involves a selling organization trying to sell a product, and/or a support department working with a customer to solve a problem. Depending on the size of the organization, the number of conference calls can vary between three and a multitude in any given week.

Three times per week
4 – 6 participants
45 minutes
Operator – light
Web – light
Recording – light

Casual – Family Conference

This market hasn't been addressed heretofore. At times, three-way calling simply doesn't get everyone into the same conversation as might be desired by those engaged in the conversation. Usage patterns might range from never to once a week. But the market is likely very, very large.

Once per year
4 – 5 participants
90 minutes
Operator – medium
Web – light
Recording – light

Financial

Stockholders meeting, IPO announcements and breaking news about company plans, all are grist for this type of conference. Web convergence is very much a part of this type of conference.

Once per month
20 – 25 participants (active). Unknown (inactive)
75 minutes
Operator – medium
Web – heavy
Recording – heavy

Emergency Services

A utility company – or other organization, could use a dynamic conference as a way for those dealing with whatever situation is at issue to communicate with each other. Conferees would enter and exit at will.

On demand
20-25 participants (active) Unknown (inactive)
24 or more hours
Operator – light
Web – heavy
Recording – heavy

Accolades

At Pulver's Spring Voice Over Net show (VON), eMeeting was awarded top honors in the carrier class competition. The list of judges is shown on the award itself, as reproduced below. While the complete list of competitors was never published, such companies as Lucent and Nortel are reputed to have entered.
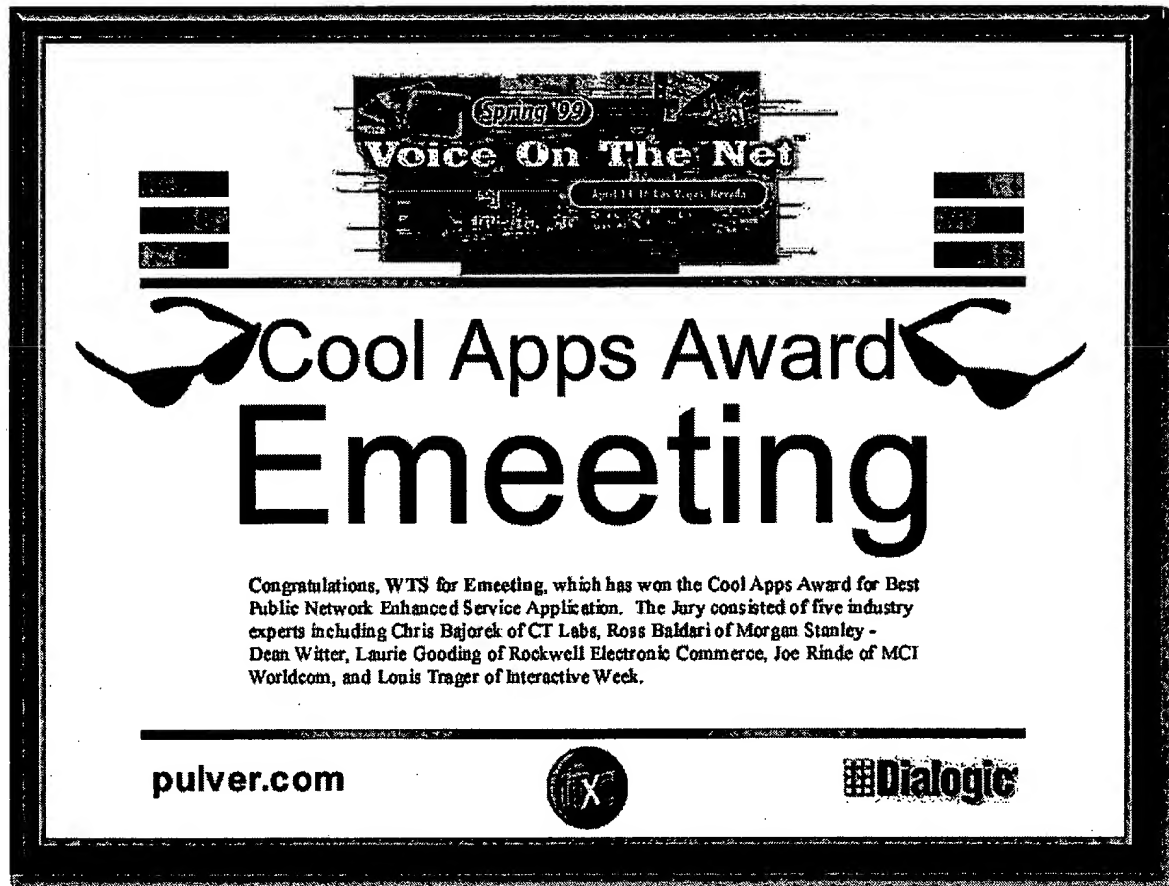
The list of judges includes representatives from CT Labs, Morgan Stanley – Dean Witter, Rockwell Electronic Commerce, MCI WorldCom and Interactive Week.

Over the years, WTS has won many awards associated with reliability, accuracy, high-volume systems, and technical innovation.

Screen Shots

The following is a screen shot of eMeeting.net's unique command and control program:

[Available only to those who have signed a Non-Disclosure Agreement]

This module comes in two versions; one for control use, and the other for passive observation by participants.